

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE GENERAL SPECIFICATION**

**IRRIGATION WATER CONVEYANCE
(Non-reinforced Concrete Pipeline)
(ft.)**

CODE 430CC

1. SCOPE

The work shall consist of furnishing and installing non-reinforced concrete pipe, fittings, and appurtenances as specified

2. LOCATION

The pipeline shall be located as shown on furnished drawings or as staked in the field.

3. PUBLIC AND PRIVATE UTILITIES

Utilities are defined to be overhead and underground power or communication lines, and pipelines. All utilities discovered to be in the work area are shown on the drawings or sketches. However, the absence of indicators on the drawings or sketches does not assure the nonexistence of utilities in the work area. The contractor is alerted to conduct his/her own search and discovery for utilities in order to lessen or avoid potential damages. The owner/operator shall complete TX-ENG-80, UTILITIES INVENTORY prior to layout or any ground disturbance and return it to an NRCS representative.

4. INSTALLATION AND MATERIALS

Irrigation Water Conveyance- Non-reinforced Concrete Pipeline Specifications (National) shall be followed with regard to installation and materials used.

Air vacuum release valve outlets shall have a two-inch nominal minimum diameter. Two-inch outlets shall be used for lines of 6-inch diameter or less; 3-inch outlets for lines of 7-inch to 10-inch diameter and 4-inch outlets for lines of 12-inch diameter or larger.

At low places on the ground surface extra fill may be placed over the pipeline to provide the minimum depth of cover. In such cases the top width of the fill shall be no less than 10 feet and the side slopes no steeper than 6 to 1.

Minimum Depth of Cover. The pipeline shall be placed deep enough below the land surface to protect it from the hazards imposed by traffic crossings, farming operations, freezing temperatures, or soil cracking. The minimum depths of cover shall be 18 in. for pipe sizes 12 in. and less in diameter and 24 inches for pipelines greater than 12 in. in diameter.

Conservation practice general specifications are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.
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Exceptions to these depths may be specified for rocky areas or other local conditions. If a shallower covering is specified, there shall be provisions to protect the line from damage by vehicular traffic. Greater depths of cover shall be specified when local conditions indicate a need.

Trench Construction. If trenches are excavated in soils containing rock or other hard materials or in soils susceptible to appreciable swelling and shrinking or wetting or drying, or if the trench bottom is unstable, the trenches shall be over-excavated and backfilled with selected materials to sufficient depth to provide a suitable base. If water is in the trench, it shall be drained away or controlled in such a manner as not to damage the joint mortar, and a suitable base shall be maintained.

Openings. Openings into mortar joint and cast-in-place concrete pipelines shall be covered to prevent air circulation except when work is actually in progress. Such openings shall be kept closed until the pipeline is completed and is to be filled with water.

Joints and Connections. All joints and connections shall be designed and constructed to withstand the design maximum working pressure for the pipeline without leakage and to leave the inside of the line free of any obstruction that may tend to reduce its capacity below design requirements.

Mortar joints shall be protected from drying out. If the soil used in the initial backfill is not thoroughly moist, a suitable membrane shall be used over the mortar. Membranes consisting of one layer of kraft paper or paper cut from cement sacks or membranes conforming to specifications in ASTM-C171 or C-309 shall be considered suitable.

Thrust Blocks. Thrust blocks must be formed against a solid hand-excavated trench wall undamaged by mechanical equipment. They shall be constructed of concrete, and the space between the pipe and the trench wall shall be filled to a height of the outside diameter of the pipe. The block shall have a minimum thickness of 6 in. and the bearing area specified.

Backfill. The backfill material shall be placed so that the pipe will not be displaced or damaged and so that the backfill is level with the natural ground or at the design grade required to provide the minimum depth of cover after settlement.

An initial backfill of soil shall be placed around the mortar joint pipe and over it to a depth of 6 in. for the full width of the trench. The initial backfill shall not lag behind pipe laying by more than seven sections of pipe.

If laying ceases for 2 hours or more, the initial backfill shall be brought up to and cover the last completed joint. Nothing in this section shall prohibit the complete backfilling while mortar bands are still plastic. If complete backfilling is not done at this time, completion shall be delayed at least 20 hours. To prevent damage to mortar joints, the trench shall be backfilled to the minimum specified cover or to 2 feet, whichever is less, before the pipe is filled with water.

Cast-In-Place Pipelines. Cast-in-place pipe shall be installed, cured, and backfilled according to the requirements set forth in ACI 346-70.

Testing. Concrete pipelines shall be tested for leaks by observing their normal operation any time after 2 weeks of continuous wetting. All visible leaks shall be repaired. Seasonal cold water shall not be used for this test.

It shall be demonstrated by testing that the pipeline will function properly at design capacity. At or below design capacity there shall be no objectionable flow conditions such as water hammer, continuing unsteady delivery of water, damage to the pipeline, or detrimental discharge from control valves, vents, or stands.

Basis of Acceptance. The acceptability of the pipeline shall be determined by inspections to check compliance with all the provisions of this standard with respect to the design of the line, the pipe and pipe markings, the appurtenances used, and the minimum installation requirements. *When conditions warrant, the State Conservation Engineer may elect to request the manufacturer to furnish material test data and written certification of compliance with the applicable ASTM Specifications, including a description of the method to be used in identifying the certified material*

Materials

Pipe. Non-reinforced concrete pipe laid with mortar joints shall conform to or exceed the requirements in ASTM-C-118.

If non-reinforced concrete pipe are laid with rubber gasket joints, the rubber gaskets shall conform to or exceed the requirements in ASTM-C-505.

Non-reinforced cast-in-place concrete pipe shall conform to or exceed the requirements of American Concrete Institute Standard 346-70.

Stands. If constructed of concrete pipe having a diameter greater than 24 in., the pipe shall conform to the standards in ASTM-C76 or C-478.

Cast-in-place stands shall contain steel reinforcing on not more than 1-ft centers to provide steel areas equal to or greater than the least values specified for Class II (1,500-D-Ultimate) pipe in ASTM-C-76.

5. CERTIFICATION AND GUARANTEE

The installing contractor shall certify to the purchaser that the materials and installation comply with the requirements of these specifications. He shall furnish the purchaser a written guarantee against defective workmanship and materials to cover a period of not less than one year. He shall record on the guarantee the manufacturer's name and markings of the nonreinforced concrete pipe used.

The installing contractor shall furnish the Natural Resource Conservation Service a copy of his certification and guarantee, which will be made a part of the supporting records of the pipeline.

6. *MEASUREMENT*

The amount of pipeline completed as specified will be determined by measuring the length, in feet, of each size and kind of pipe installed.

7. *CONSTRUCTION DETAILS*